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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,490	04/25/2005	Meinhard Schwefer	09600-00023-US	1533
23416 7590 01/14/2008 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			EXAMINER VANOY, TIMOTHY C	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 01/14/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/510,490	<b>Applicant(s)</b> SCHWEFER ET AL.	
	<b>Examiner</b> Timothy C. Vanoy	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Priority*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/51182 A1 to Schwefer et al. in view of the literature reference titled "Selective catalytic reaction of N<sub>2</sub>O with methane in the presence of excess oxygen over Fe-BEA zeolite" by S. Kameoka et al.

The English abstract of this Schwefer reference describes a method for removing both NO<sub>x</sub> and N<sub>2</sub>O from the exhaust gas emitted from a nitric acid production process, comprising:

passing the exhaust gas through a first stage where the NO<sub>x</sub> is reduced (evidently via reaction between the NO<sub>x</sub> and ammonia: please note pg. 10 lns. 3-10, and also evidently at a temperature below 400 °C: please see pg. 6 lns. 23-29), and

passing the exhaust gas through a second stage comprising an iron-loaded zeolite where the N<sub>2</sub>O is reduced (evidently via reaction between the N<sub>2</sub>O and NO: please note pg. 7 ln. 7), evidently at a temperature of 300 to 550 °C (please also see claim 6 in this Schwefer et al. reference).

The difference between the applicants' claims and this Schwefer reference is that the applicants' claims call for the use of either a hydrocarbon, carbon monoxide or hydrogen as the reducing agent for the N<sub>2</sub>O (whereas the Schwefer reference appears to use NO as the reducing agent for the N<sub>2</sub>O: please note pg. 7 ln. 7).

The Kameoka et al. literature reference describes the reaction of  $N_2O$  with methane over an iron-exchanged BEA zeolite catalyst (please see the abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the process described in the Schwefer reference *by substituting* the methane reducing agent for  $N_2O$  described in the abstract of the Kameoka et al. literature reference in lieu of the NO reducing agent for  $N_2O$  described on pg. 7 ln. 7 in the Schwefer reference, in the manner set forth in the applicants' claims, *because* the courts have already determined that such substitution of one known functional equivalent in lieu of another known functional equivalent is *prima facie* obvious: please note the discussion of the *In re Fout* 675 F.2d 297, 213 USPQ 532 (CCPA 1982) court decision set forth in section 2144.06 in the MPEP.

The difference between the Applicants' claims and the Schwefer and Kameoka references is that Applicants' claim 6 calls for the use of ethane, propane, etc. as the reducing agent for the  $N_2O$  (whereas the Kameoka reference only mentions the use of methane of as a reducing agent for the  $N_2O$ ), however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made because the ethane, propane, etc. of Applicants' claim 6 are submitted to have a "reasonable expectation of success" of also acting as a functionally-equivalent hydrocarbon reducing agent (i. e. in lieu of the methane of the Kameoka reference) for the  $N_2O$ . A "reasonable expectation of success" is evidence of obviousness: please note section 2143.02(I) in the MPEP.

***Response to Arguments***

Applicant's arguments submitted with the Amendment filed on Dec. 17, 2007 have been fully considered but they are not persuasive.

a) *The Applicants argue that the methane of the Kameoka reference can not be used as a "functional equivalent" of the NO of the Schwefer reference because Schwefer teaches that the NO acts as a co-catalyst to the zeolite and is thus not consumed in the reaction. In contrast, the methane of the Kameoka reference is consumed during the reduction of the N<sub>2</sub>O and is oxidized into carbon dioxide and water.*

The Applicants' arguments do not appear to be consistent with the disclosure set forth on pg. 7 lns. 5-8 in the Schwefer reference where it is disclosed that the NO is consumed during the reduction of the N<sub>2</sub>O via the reaction:  $\text{NO} + \text{N}_2\text{O} \rightarrow \text{N}_2 + \text{NO}_2$ .

b) *The Applicants argue that if the sub-stoichiometric amount of NO<sub>x</sub> in the Schwefer process was replaced by a sub-stoichiometric amount of methane, there would be insufficient amounts of methane present for the reduction of the N<sub>2</sub>O.*

The reaction:  $\text{NO} + \text{N}_2\text{O} \rightarrow \text{N}_2 + \text{NO}_2$  set forth on pg. 7 lns. 5-8 in the Schwefer reference does not have a sub-stoichiometric amount of NO relative to the N<sub>2</sub>O (as the Applicants' argument would have it).

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

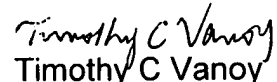
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 571-272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Timothy C Vanoy  
Primary Examiner  
Art Unit 1793

tcv